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EXAMINER	
SHEPARD, JUSTIN E	

ART UNIT	PAPER NUMBER
2623	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/817,012	CHILDERS ET AL.	
	Examiner	Art Unit	
	Justin E. Shepard	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-58 and 61-67* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-58 and 61-67* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

In view of the Appeal Brief filed on 04/26/2007, PROSECUTION IS HEREBY REOPENED. The new grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

Chris Kelley.

CHRIS KELLEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection, which was made necessary the Supreme Court decision known as "KSR."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 5, 6, 7, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Smith.

Referring to claim 1, Songer discloses a method of displaying an image frame in three dimensions (3D) or in two dimensions (2D) with a single light engine (abstract, lines 1-3), said method comprising: generating a left image sub-frame and a right image sub-frame if said 3D mode of operation is selected (abstract, lines 20-21); and generating a 2D image frame if said 2D mode of operation is selected (abstract, lines 22-23); wherein said left image sub-frame defines a visual perspective of a left eye and said right image sub-frame defines a visual perspective of a right eye during a frame period if said 3D mode of operation is selected and said 2D image frame is displayed during said frame period if said 2D mode of operation is selected (column 5, lines 40-41, 48-50).

Songer does not disclose a system for selecting between a 2D mode of operation and a separate 3D mode of operation; and including a projection display for a 2D/3D projection system.

In an analogous art, McLaine teaches a system for selecting between a 2D mode of operation and a separate 3D mode of operation (column 8, lines 63-66).

At the time of the invention it would have been obvious for one of ordinary skill in the art to add the 2D/3D mode switch taught by McLaine to the system disclosed by Songer. The motivation would have been to allow the user to simply switch between the two modes, thereby increasing the system's usability (McLaine: column 8, lines 63-66).

Songer and McLaine do not disclose a system including a projection display for a 2D/3D projection system.

In an analogous art, Smith teaches a system including a projection display for a 2D/3D projection system (paragraph 26).

At the time of the invention it would have been obvious for one of ordinary skill in the art to add the 2D/3D projector taught by Smith to the system disclosed by Songer and McLaine. The motivation would have been to allow the system to display a large image size cheaper than with a CRT or LCD display.

Referring to claim 5, Songer discloses a method of claim 1, further comprising: dividing said frame period into a first sub-frame period and a second sub-frame period; displaying said left image sub-frame during said first sub-frame period; and displaying said right image sub-frame during said second sub-frame period (column 9, lines 59-65; figure 15).

Referring to claim 6, Songer discloses a method of claim 1, further comprising: dividing said frame period into a number of sub-frame periods; displaying said left image sub-frame during one or more of said sub- frame periods; and displaying said right image sub-frame during one or more of said sub- frame periods; wherein said left and right image sub-frames are displayed in an interleaved manner (column 10, lines 6-10; figure 16).

Referring to claim 7, Songer discloses a method of claim 1, further comprising viewing said left and right image sub-frames through glasses comprising a left lens configured to allow a left eye to only perceive said left image sub-frame and a right lens configured to allow a right eye to only perceive said right image sub-frame (column 5, lines 63-67; column 6, lines 30-35).

Referring to claim 46, Songer discloses a system of claim 27, wherein said mode of operation is selected automatically without user intervention (column 6, lines 30-35; Note: since the user does not need to have contact with the display system to use it in 3D mode, it is interpreted as being selected (from the system's point of view) automatically without any interference from the user).

2. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Smith as applied to claim 1 above, and further in view of Divelbiss.

Referring to claim 18, Songer, McLaine, and Smith do not disclose a method of claim 1, wherein said left imago sub-frame and said fight image sub-frame have differing polarizations.

In an analogous art, Divelbiss teaches a method of claim 1, wherein said left imago sub-frame and said fight image sub-frame have differing polarizations (page 17, paragraph 215, lines 1-5).

At the time of the invention it would have been obvious for one of ordinary skill in the art to add the polarizations taught by Divelbiss to the system disclosed by Songer, McLaine, and Smith. The motivation would have been to enable the device to provide a 3D image without using an expensive shutter driven system.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Smith as applied to claim 1 above, and further in view of Stuettler.

Referring to claim 2, Songer discloses a method of claim 1, wherein said step of generating said left and right image sub-frames comprises: generating left and right image sub-frame data defining said left and right image sub-frames.

Songer, McLaine and Smith do not disclose a method where storing said right image sub-frame data in a second buffer; and controlling a spatial light modulator with said left and right image sub- frame data in said first and second buffers to generate said left and right image sub-frames.

In an analogous art, Stuettler teaches a method where storing said right image sub-frame data in a second buffer; and controlling a spatial light modulator with said left and right image sub- frame data in said first and second buffers to generate said left and right image sub-frames (column 2, lines 52-56; figure 4, parts 8a).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to add the buffers from Stuettler to the method disclosed by Songer, McLaine, and Smith. The motivation for doing this would have been to allow for the display output to be synced up with the shutter glasses by controlling the outputs of the buffer.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Smith in view of Stuettler as applied to claim 2 above, and further in view of Hochmuth.

Referring to claim 3, Songer, McLaine, Smith and Stuettler do not disclose a method of claim 2, wherein a single buffer unit comprises said first and second buffers.

In an analogous art, Hochmuth teaches a method of claim 2, wherein a single buffer unit comprises said first and second buffers (page 1, paragraph 9, lines 8-15).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to replace the two buffers disclosed in Stuettler with the single buffer from Hochmuth. The motivation for doing this would have been to reduce the amount of control circuitry by only needing to control a single buffer unit.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Smith as applied to claim 1 above, and further in view of Hochmuth.

Referring to claim 4, Songer, McLaine and Smith do not disclose a method of claim 1, wherein said step of generating said 2D image frame comprises: generating 2D image frame data defining said 2D image frame; storing said 2D image frame data in a buffer; and controlling a spatial light modulator with said 2D image frame data in said buffer to generate said 2D image frame.

In an analogous art, Hochmuth teaches a method of claim 1, wherein said step of generating said 2D image frame comprises: generating 2D image frame data defining said 2D image frame; storing said 2D image frame data in a buffer; and controlling a spatial light modulator with said 2D image frame data in said buffer to generate said 2D image frame (page 1, paragraph 9, lines 8-15).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to observe that if the method disclosed by Songer displays images that can be viewed in either two or three dimensions depending on whether or not you're wearing a pair of glasses, that the buffering of the 3D frames described in Hochmuth would also be buffering the 2D frames.

6. Claims 8-11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Smith as applied to the claims above, and further in view of Krasnoperov.

Referring to claim 8, Songer, McLaine and Smith do not disclose a method of claim 1, wherein said left image sub-flame comprises a first group of colors and said right image sub-frame comprises a second group of colors distinct from said first group of colors.

In an analogous art, Krasnoperov teaches a method of claim 1, wherein said left image sub-flame comprises a first group of colors and said right image sub-frame comprises a second group of colors distinct from said first group of colors (column 2, lines 57-60).

At the time of the invention it would have been obvious for one of ordinary skill of art to add the color grouping taught by Krasnoperov to the system previously disclosed. The motivation would have been to use more colors to provide a more detailed image.

Referring to claim 9, Songer discloses a method of claim 8, wherein said 2D image frame comprises one or more of said colors in said first and second groups of colors (Abstract: lines 20-23).

Referring to claim 10, Songer, McLaine and Smith do not disclose a method of claim 8, wherein said first group of colors comprises two or more colors and said second group of colors comprises two or more colors.

In an analogous art, Krasnoperov teaches a method of claim 8, wherein said first group of colors comprises two or more colors and said second group of colors comprises two or more colors (column 2, lines 57-60).

At the time of the invention it would have been obvious for one of ordinary skill of art to add the color grouping taught by Krasnoperov to the system previously disclosed. The motivation would have been to use more colors to provide a more detailed image.

Referring to claim 11, the references used to reject the claim refer to 3D displays using different color combinations to create the display seen by the user. The references do not explicitly teach a method wherein the first group of colors comprises RGB and the second group of colors comprises CYM; and as it is well known in the art to use both RGB and CYM color groupings to display images on electronic displays the claims are rejected using the KSR ruling of the Supreme Court.

Thus it would have been obvious to one having ordinary skill in the art to use the RGB color grouping for the first group of colors, and the CYM color grouping for the second group of colors. As all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

Referring to claim 15, Songer discloses a method of claim 8, further comprising generating said colors in said first and second groups of colors with a diffractive light device (figure 4, part 72; Note: the definition of a diffractive light device is "a device to change the direction and intensity of a group of waves after passing by an obstacle or through an aperture.").

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Smith in view of Krasnoperov as applied to claim 8 above, and further in view of Divelbiss.

Referring to claim 12, Songer, McLaine, Smith and Krasnoperov do not disclose a method of claim 8, further comprising generating said colors in said first and second groups of colors with a sequential color device.

In an analogous art, Divelbiss teaches a method of claim 8, further comprising generating said colors in said first and second groups of colors with a sequential color device (figure 39, Color Wheel).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to replace the display system disclosed in Songer with the sequential color device disclosed in Divelbiss. The motivation for doing this would have been to allow for the use of a grayscale CRT monitor instead of a color CRT.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine Smith in view of Krasnoperov as applied to claim 8 above, and further in view of Anderson.

Referring to claim 13, Songer, McLaine, Smith, and Krasnoperov do not disclose a method of claim 8, further comprising generating said colors in said first and second group of colors with a scrolling color device.

In an analogous art, Anderson teaches a method of claim 8, further comprising generating said colors in said first and second group of colors with a scrolling color device (section 1, lines 1-3).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to replace the display system disclosed in Songer with the scrolling color device disclosed in Anderson. The motivation for doing this would have been to allow the designer to adjust the relative optical powers of the primary colors by changing the stripe heights of the primary colors (page 1, section 1, lines 10-11).

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Smith in view of Krasnoperov in further view of Sato (An author of a SPIE article titled "New Type Electo-Holographic Display System Using LCDs").

Referring to claim 14, Songer, McLaine, Smith, and Krasnoperov do not disclose a method of claim 8, further comprising generating said colors in said first and second groups of colors with a parallel color device.

In an analogous art, Sato teaches a method of claim 8, further comprising generating said colors in said first and second groups of colors with a parallel color device (abstract, paragraph 2, lines 1-4).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to replace the display system disclosed in Songer with the parallel color

device disclosed in Sato. The motivation for doing this would have been to make the system more compact (abstract, line 8).

10. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Smith in view of Krasnoperov as applied to claim 15 above, and further in view of Bolas.

Referring to claims 16 and 17, Songer, McLaine, Smith and Krasnoperov do not disclose a method of claim 15, further comprising notch filtering light incident upon said diffractive light device; and further comprising notch filtering light reflecting from said diffractive light device.

Bolas discloses a method of claim 15, further comprising notch filtering light incident upon said diffractive light device; and further comprising notch filtering light reflecting from said diffractive light device (page 19, section "Optical filtering," paragraph 2, lines 2-8).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to use the notch filters from Bolas in conjunction with the diffractive light device from Songer, McLaine, Smith and Krasnoperov. The motivation for doing this would have been to restrict the device to specific wavelengths of light.

11. Claims 19-26, 48, 49, 53, 55, 56, 58, and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Divelbiss in view of Krasnoperov.

Referring to claim 19, Divelbiss discloses a method of displaying an image in three dimensions during a frame period, said method comprising: generating a left image sub-frame and a right image sub-frame, said left image sub-frame defining a visual perspective of a left eye and said right image sub-frame defining a visual perspective of a right eye for said image (page 11, paragraph 177); displaying said left image sub-frame with said display system, wherein said electronic (figure 43 shows an electronic system) display system outputs a display of said left image sub-frame (figure 43) utilizing a first plurality of colors; and displaying said right image sub-frame with said display system, wherein said display system outputs a display of said right image sub-frame (figure 43) utilizing a second plurality of colors.

Divelbiss does not disclose a method wherein said first plurality of colors is distinct from said second plurality of colors.

In an analogous art, Krasnoperov teaches a method wherein said first plurality of colors is distinct from said second plurality of colors (column 2, lines 57-60).

At the time of the invention it would have been obvious for one of ordinary skill of art to add the color grouping taught by Krasnoperov to the disclosed by Divelbiss. The motivation would have been to use more colors to provide a more detailed image.

Referring to claim 20, Divelbiss does not disclose a method of claim 19, wherein said first plurality of colors and said second plurality of colors comprise different sets of primary colors.

In an analogous art, Krasnoperov teaches a method of claim 19, wherein said first plurality of colors and said second plurality of colors comprise different sets of primary colors (column 2, lines 57-60).

At the time of the invention it would have been obvious for one of ordinary skill of art to add the color grouping taught by Krasnoperov to the disclosed by Divelbiss. The motivation would have been to use more colors to provide a more detailed image.

Referring to claim 21, Divelbiss discloses a method of claim 19, further comprising: dividing said frame period into a plurality of sub-frame time periods including at least one left sub-frame time period and one right sub-frame time period; displaying said left image sub-frame during said at least one left sub- frame time period; and displaying said right sub-frame image during said at least one right image sub-frame time period (page 11, paragraph 177).

Referring to claim 22, Divelbiss discloses a method of claim 19, wherein said left image sub-frame is displayed during a first portion of said frame period and said right image sub-frame is displayed during a second portion of said frame period, wherein said first portion and said second portion are overlapping (page 11, paragraph 181).

Referring to claim 23, Divelbiss does not disclose a method of claim 19, wherein said first plurality of colors includes red, green, and blue.

In an analogous art, Krasnoperov teaches a method of claim 19, wherein said first plurality of colors includes red, green, and blue (column 2, lines 57-60).

At the time of the invention it would have been obvious for one of ordinary skill of art to add the color grouping taught by Krasnoperov to the disclosed by Divelbiss. The motivation would have been to use more colors to provide a more detailed image.

Referring to claim 24, Divelbiss does not disclose a method of claim 25, wherein said second plurality of colors includes red, green, and blue.

In an analogous art, Krasnoperov teaches a method of claim 19, wherein said second plurality of colors includes red, green, and blue (column 2, lines 57-60).

At the time of the invention it would have been obvious for one of ordinary skill of art to add the color grouping taught by Krasnoperov to the disclosed by Divelbiss. The motivation would have been to use more colors to provide a more detailed image.

Referring to claim 25, the references used to reject the claim refer to 3D displays using different color combinations to create the display seen by the user. The references do not explicitly teach a method wherein the first group of colors comprises CYM; and as it is well known in the art to use both RGB and CYM color groupings to display images on electronic displays the claims are rejected using the KSR ruling of the Supreme Court.

Thus it would have been obvious to one having ordinary skill in the art to use the RGB color grouping for the first group of colors. As all the claimed elements were

known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

Referring to claim 26, the references used to reject the claim refer to 3D displays using different color combinations to create the display seen by the user. The references do not explicitly teach a method wherein the second group of colors comprises CYM; and as it is well known in the art to use both RGB and CYM color groupings to display images on electronic displays the claims are rejected using the KSR ruling of the Supreme Court.

Thus it would have been obvious to one having ordinary skill in the art to use the CYM color grouping for the second group of colors. As all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

Referring to claim 48, Divelbiss discloses a device, comprising: an image processing unit configured to generate image sub-frame data; and a color modulator electronically coupled (figure 13) to said image processing unit configured to generate a plurality of image sub-frames based on said image sub-frame data (page 11, paragraph

177); wherein said color modulator generates a first plurality of colors to output at least one image sub-frame of said plurality of image sub-frames and a second plurality of colors (page 18, paragraph 222, lines 1-7, 14-20), for at least one other image sub-frame of said plurality of image sub-frames.

Divelbiss does not disclose a device, wherein the first set and second set of colors are distinct.

In an analogous art, Krasnoperov teaches a device, wherein the first set and second set of colors are distinct (column 2, lines 57-60).

At the time of the invention it would have been obvious for one of ordinary skill of art to add the color grouping taught by Krasnoperov to the disclosed by Divelbiss. The motivation would have been to use more colors to provide a more detailed image.

Referring to claim 49, Divelbiss does not disclose a device of claim 48, wherein said first plurality of colors and said second plurality of colors comprise different sets of primary colors.

In an analogous art, Krasnoperov teaches a device of claim 48, wherein said first plurality of colors and said second plurality of colors comprise different sets of primary colors (column 2, lines 57-60).

At the time of the invention it would have been obvious for one of ordinary skill of art to add the color grouping taught by Krasnoperov to the disclosed by Divelbiss. The motivation would have been to use more colors to provide a more detailed image.

Referring to claim 53, Divelbiss discloses a 3D imaging device of claim 48, further comprising: at least one set of lenses having a first and second lens wherein said first lens filters out said first plurality of colors and said second lens filters out said second plurality of colors (paragraph 222, lines 14-20).

Referring to claim 55, Divelbiss discloses a device of claim 48, wherein said color modulator displays said at least one image sub-frame and said at least one other image sub-frame at the same time during one frame period (page 11, paragraph 179).

Referring to claim 56, Divelbiss discloses a device of claim 48, wherein said color modulator includes an array of pixels and is configured to display said at least one image sub-frame and said at least one other image sub-frame in alternating adjacent pixels during at least a portion of one frame period (page 11, paragraph 181).

Referring to claim 58, Divelbiss does not disclose a 3D imaging device of claim 57, wherein said 2D image frame including said first set primary colors and said second set of primary colors.

In an analogous art, Krasnoperov teaches a 3D imaging device of claim 57, wherein said 2D image frame including said first set primary colors and said second set of primary colors (column 2, lines 57-60).

At the time of the invention it would have been obvious for one of ordinary skill of art to add the color grouping taught by Krasnoperov to the disclosed by Divelbiss. The motivation would have been to use more colors to provide a more detailed image.

Referring to claim 66, Divelbiss discloses a system for displaying an image in three dimensions during a frame period, said system comprising: means for generating a left image sub-frame and a right image sub- frame, said left image sub-frame defining a visual perspective of a left eye and said right image sub-frame defining a visual perspective of a right eye for said image (page 11, paragraph 177); means for electronically (figure 13) displaying said left image sub-frame utilizing a first plurality of colors to compose the display of the left image sub-frame; and means for electronically (figure 13) displaying said right image sub-frame utilizing a second plurality of colors to compose the display of the right image sub-frame (page 18, paragraph 222, lines 1-7, 14-20).

Divelbiss does not disclose a system wherein said first plurality of colors is distinct from said second plurality of colors.

In an analogous art, Krasnoperov teaches a system wherein said first plurality of colors is distinct from said second plurality of colors (column 2, lines 57-60).

At the time of the invention it would have been obvious for one of ordinary skill of art to add the color grouping taught by Krasnoperov to the disclosed by Divelbiss. The motivation would have been to use more colors to provide a more detailed image.

12. Claims 27-30, 33-35, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine.

Referring to claim 27, Songer discloses a system with a selectable mode of operation for displaying an image frame in three dimensions (3D) or in two dimensions (2D), said system comprising: a spatial light modulator; and an image processing unit configured to control said spatial light modulator (column 5, lines 59-62); wherein if said selected mode of operation is said 3D mode of operation, said spatial light modulator generates a left image sub-frame carrying a left eye perspective and a right image sub-frame carrying a right eye perspective during a frame period (abstract, lines 20-21) and if said selected mode of operation is said 2D mode of operation, said spatial light modulator generates a 2D image frame to be displayed on said viewing surface during said frame period (abstract, lines 22-23).

Songer does not disclose a system for selecting between a 2D mode of operation and a separate 3D mode of operation; and including a projection display for a 2D/3D projection system.

In an analogous art, McLaine teaches a system for selecting between a 2D mode of operation and a separate 3D mode of operation (column 8, lines 63-66).

At the time of the invention it would have been obvious for one of ordinary skill in the art to add the 2D/3D mode switch taught by McLaine to the system disclosed by Songer. The motivation would have been to allow the user to simply switch between the two modes, thereby increasing the system's usability (McLaine: column 8, lines 63-66).

Referring to claims 28 and 29, Songer discloses a system of claim 27, wherein said image processing unit comprises: a 3D coordinate conversion function configured to generate left and right image sub-frame data defining said left and right image sub-frames; wherein said spatial light modulator is configured to generate said left and right image sub-frames in accordance with said left and right image sub- frame data (figure 12); and where the image processing unit further comprises: a 2D coordinate conversion function configured to generate 2D image frame data defining said 2D image frame; wherein said spatial light modulator is further configured to generate said 2D image frame in accordance with said 2D image frame data (figure 12; Note: as the same frames used for the 3D image as are used for the 2D image, therefore any coordinate conversion performed on the 3D image would be performed on the 2D image).

Referring to claims 33 and 34, Songer discloses a system of claim 27, wherein said frame period comprises a first sub-frame period and a second sub-frame period, said left image sub- frame being displayed during said first sub-frame period and said right image sub-frame being displayed during said second sub-frame period (column 9, lines 59-65); and where the frame period comprises a number of sub-frame periods, wherein said left and right image sub-frames are each displayed during one or more of said sub-frame periods in an interleaved manner (column 10, lines 6-11).

Referring to claim 35, Songer discloses a system of claim 27, further comprising glasses, said glasses comprising: a left lens configured to allow a left eye of a user of said glasses to only perceive said left image sub-frame; and a right lens configured to allow a right eye of a user of said glasses to only perceive said right image sub-frame (column 5, lines 63-64; column 6, lines 30-35).

Referring to claim 45, Songer does not disclose a system of claim 27, wherein said mode of operation is selected by a user of said display system.

In an analogous art, McLaine teaches a system of claim 27, wherein said mode of operation is selected by a user of said display system (column 8, lines 63-66).

At the time of the invention it would have been obvious for one of ordinary skill in the art to add the 2D/3D mode switch taught by McLaine to the system disclosed by Songer. The motivation would have been to allow the user to simply switch between the two modes, thereby increasing the system's usability (McLaine: column 8, lines 63-66).

13. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine as applied to claim 29 above, and further in view of Stuettler.

Referring to claim 30, Songer and McLaine do not disclose a system of claim 29, further comprising: a first buffer for storing said left image sub-frame data to be used by said spatial light modulator to generate said left image sub-frame; a second buffer for storing said right image sub-frame data to be used by said spatial light modulator to

generate said right image sub-frame; and a third buffer for storing said 2D image frame data to be used by said spatial light modulator to generate said 2D image frame.

In an analogous art, Stuettler teaches a system of claim 29, further comprising: a first buffer for storing said left image sub-frame data to be used by said spatial light modulator to generate said left image sub-frame; a second buffer for storing said right image sub-frame data to be used by said spatial light modulator to generate said right image sub-frame (column 2, lines 52-56; figure 4, parts 8a); and a third buffer for storing said 2D image frame data to be used by said spatial light modulator to generate said 2D image frame (Note: as the 2D image is made up of both frames used in the 3D image, both buffers in combination are being interpreted as the third 2D buffer).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to add the buffers from Stuettler to the method disclosed by Songer and McLaine. The motivation for doing this would have been to allow for the display output to be synced up with the shutter glasses by controlling the outputs of the buffer.

14. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Stuettler as applied to claim 30 above, and further in view of Hochmuth.

Referring to claims 31 and 32, Songer and Stuettler do not disclose a system of claim 30, wherein a single buffer unit comprises said first, second, and third buffers; and a single buffer unit comprises said first and second buffers.

Hochmuth discloses a system of claim 30, wherein a single buffer unit comprises said first, second, and third buffers (page 1, paragraph 9, lines 8-15); and a single buffer unit comprises said first and second buffers (Note: as claim was interpreted above, the two buffers used in the 3D mode are both used as the buffers in the 2D mode, therefore the combination of the two buffers used in the 3D mode would be the same as the all three buffers being combined as disclosed in claim 31).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to replace the three buffers disclosed in Stuettler with the single buffer from Hochmuth. The motivation for doing this would have been to reduce the amount of control circuitry by only needing to control a single buffer unit.

15. Claims 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine as applied to claim 27 above, and further in view of Krasnoperov.

Referring to claim 36, Songer and McLaine do not disclose a system of claim 27, wherein said left image sub-frame comprises a first group of colors and said right image sub-frame comprises a second group of colors distinct from said first group of colors.

In an analogous art, Krasnoperov teaches a system of claim 27, wherein said left image sub-frame comprises a first group of colors and said right image sub-frame comprises a second group of colors distinct from said first group of colors (column 2, lines 57-60).

At the time of the invention it would have been obvious for one of ordinary skill of art to add the color grouping taught by Krasnoperov to the disclosed by Divelbiss. The motivation would have been to use more colors to provide a more detailed image.

Referring to claim 37, Songer discloses a method of claim 36, wherein said 2D image frame comprises one or more of said colors in said first and second groups of colors (Abstract: lines 20-23).

Referring to claim 38, Songer does not disclose a system of claim 36, wherein said first group of colors comprises two or more colors and said second group of colors comprises two or more colors.

In an analogous art, Krasnoperov teaches a system of claim 36, wherein said first group of colors comprises two or more colors and said second group of colors comprises two or more colors (column 2, lines 57-60).

At the time of the invention it would have been obvious for one of ordinary skill of art to add the color grouping taught by Krasnoperov to the disclosed by Divelbiss. The motivation would have been to use more colors to provide a more detailed image.

Referring to claim 42, Songer discloses a method of claim 36, further comprising generating said colors in said first and second groups of colors with a diffractive light device (figure 4, part 72; Note: the definition of a diffractive light device is "a device to

change the direction and intensity of a group of waves after passing by an obstacle or through an aperture.").

16. Claims 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Krasnoperov as applied to claim 36 above, and further in view of Divelbiss.

Referring to claim 39, Songer, McLaine, Smith and Krasnoperov do not disclose a method of claim 36, further comprising generating said colors in said first and second groups of colors with a sequential color device.

In an analogous art, Divelbiss teaches a method of claim 8, further comprising generating said colors in said first and second groups of colors with a sequential color device (figure 39, Color Wheel).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to replace the display system disclosed in Songer with the sequential color device disclosed in Divelbiss. The motivation for doing this would have been to allow for the use of a grayscale CRT monitor instead of a color CRT.

Claim 40 is rejected on the same grounds as claim 39.

17. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Krasnoperov as applied to claim 36 above, and further in view of Sato.

Referring to claim 41, Songer, McLaine, and Krasnoperov do not disclose a method of claim 36, further comprising generating said colors in said first and second groups of colors with a parallel color device.

In an analogous art, Sato teaches a method of claim 36, further comprising generating said colors in said first and second groups of colors with a parallel color device (abstract, paragraph 2, lines 1-4).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to replace the display system disclosed in Songer with the parallel color device disclosed in Sato. The motivation for doing this would have been to make the system more compact (abstract, line 8).

18. Claims 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Krasnoperov as applied to claim 42 above, and further in view of Bolas.

Referring to claims 43 and 44, Songer, McLaine and Krasnoperov do not disclose a method of claim 15, further comprising notch filtering light incident upon said diffractive light device; and further comprising notch filtering light reflecting from said diffractive light device.

Bolas discloses a method of claim 15, further comprising notch filtering light incident upon said diffractive light device; and further comprising notch filtering light reflecting from said diffractive light device (page 19, section "Optical filtering," paragraph 2, lines 2-8).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to use the notch filters from Bolas in conjunction with the diffractive light device from Songer, McLaine, and Krasnoperov. The motivation for doing this would have been to restrict the device to specific wavelengths of light.

19. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine as applied to claim 27 above, and further in view of Anderson.

Referring to claim 47, Songer discloses a system of claim 27; wherein said spatial light modulator is selected from the group consisting of an analog based light modulator (column 5, lines 59-62).

Songer and McLaine do not disclose a system of claim 27, wherein said spatial light modulator is selected from the group consisting of a pulse- width modulation based light modulator, a liquid crystal display (LCD) panel, a liquid crystal on silicon (LCOS) device, a diffractive light device (DLD), and an array of micro-mirrors.

Anderson discloses a system of claim 27, wherein said spatial light modulator is selected from the group consisting of a liquid crystal on silicon (LCOS) device (page 1, section 1, lines 1-3).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to replace the display system disclosed in Songer with the scrolling color device disclosed in Anderson. The motivation for doing this would have been to allow the designer to adjust the relative optical powers of the primary colors by changing the stripe heights of the primary colors (page 1, section 1, lines 10-11).

20. Claims 50 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Divelbiss in view of Krasnoperov as applied to claim 48 above, and further in view of Stuettler.

Referring to claims 50 and 54, Divelbiss does not disclose a device of claim 48, further comprising one or more image sub-frame buffers for storing said image sub-frame data generated by said image processing unit; and displays said at least one image sub-frame and said at least one other image sub-frame buffer during one frame period.

In an analogous art, Stuettler teaches a device of claim 48, further comprising one or more image sub-frame buffers for storing said image sub-frame data generated by said image processing unit; and displays said at least one image sub-frame and said at least one other image sub-frame buffer during one frame period (column 2, lines 52-56; figure 4, parts 8a).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to add the buffers from Stuettler to the method disclosed by Divelbiss and Krasnoperov. The motivation for doing this would have been to allow for the display output to be synced up with the shutter glasses by controlling the outputs of the buffer.

21. Claims 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Divelbiss in view of Krasnoperov as applied to claim 48 above, and further in view of Bolas.

Referring to claims 51 and 52, Divelbiss does not disclose a device of claim 48, further comprising: a light source for illuminating said color modulator; and at least one notch filter disposed between said light source and said color modulator; and at least one notch filter disposed between said color modulator and a viewing surface.

Bolas discloses a device of claim 48, further comprising: a light source for illuminating said color modulator; and at least one notch filter disposed between said light source and said color modulator; and at least one notch filter disposed between said color modulator and a viewing surface (page 19, section "Optical filtering," paragraph 2, lines 2-8).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to use the notch filters from Bolas in conjunction with the projector system from Divelbiss and Krasnoperov. The motivation for doing this would have been to restrict the device to specific wavelengths of light.

22. Claim 57 is rejected under 35 U.S.C. 103(a) as being unpatentable over Divelbiss in view of Krasnoperov as applied to claim 48 above, and further in view of Songer.

Referring to claim 57, Divelbiss and Krasnoperov do not disclose a device of claim 48, wherein said imaging processing unit is further configured to generate 2D image frame data, wherein said color modulator generates a 2D image frame based on said 2D image frame data.

Songer discloses a device of claim 48, wherein said imaging processing unit is further configured to generate 2D image frame data, wherein said color modulator generates a 2D image frame based on said 2D image frame data (column 6, lines 30-35).

At the time of the invention if would have been obvious to a person of ordinary skill in the art to add the 2D method from Songer into the display disclosed by Divelbiss. The motivation for doing this would have been to add the ability to display 2D images on the same display and the same time as 3D images are being displayed.

23. Claims 61, 64 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of Smith in view of Taniguchi.

Referring to claim 61, Songer discloses a system for displaying an image frame in three dimensions (3D) or in two dimensions (2D) with a single light engine (column 5, lines 59-62), said system comprising: means for selecting between a 2D mode of operation and a 3D mode of operation (column 6, lines 30-35); means for generating a left image sub-frame and a right image sub- frame if said 3D mode of operation is selected; and means for generating a 2D image frame if said 2D mode of operation is selected; wherein said left and right image sub-frames are left and right perspectives during a frame period if said 3D mode of operation (column 5, lines 48-50) is selected and said 2D image frame is displayed during said frame period if said 2D mode of operation is selected.

Songer does not disclose a system for selecting between a 2D mode of operation and a separate 3D mode of operation; and including a projection display for a 2D/3D projection system; and where said 2D image frame does not comprise sub-frames having different perspectives.

In an analogous art, McLaine teaches a system for selecting between a 2D mode of operation and a separate 3D mode of operation (column 8, lines 63-66).

At the time of the invention it would have been obvious for one of ordinary skill in the art to add the 2D/3D mode switch taught by McLaine to the system disclosed by Songer. The motivation would have been to allow the user to simply switch between the two modes, thereby increasing the system's usability (McLaine: column 8, lines 63-66).

Songer and McLaine do not disclose a system including a projection display for a 2D/3D projection system; and where said 2D image frame does not comprise sub-frames having different perspectives.

In an analogous art, Smith teaches a system including a projection display for a 2D/3D projection system (paragraph 26).

At the time of the invention it would have been obvious for one of ordinary skill in the art to add the 2D/3D projector taught by Smith to the system disclosed by Songer and McLaine. The motivation would have been to allow the system to display a large image size cheaper than with a CRT or LCD display.

Songer, McLaine, and Smith do not disclose a system where said 2D image frame does not comprise sub-frames having different perspectives.

In an analogous art, Taniguchi teaches a system where said 2D image frame does not comprise sub-frames having different perspectives (paragraph 81, lines 1-2; paragraph 82, lines 6-11).

At the time of the invention it would have been obvious for one of ordinary skill in the art to have a 2D display mode where the 2D image is not made from 2 sub-frames as taught by Taniguchi, in the system disclosed by Songer and Smith. The motivation for doing this would be when the 2D image is coming from a 2D imaging device such as a normal camera (Taniguchi: paragraph 82, lines 1-3).

Referring to claim 64, Songer discloses a system of claim 61, further comprising: means for dividing said frame period into a first sub-frame period and a second sub-frame period; means for displaying said left image sub-frame during said first sub-frame period; and means for displaying said right image sub-frame during said second sub-frame period (column 9, lines 59-65; figure 15).

Referring to claim 65, Songer discloses a system of claim 61, further comprising: means for dividing said frame period into a number of sub-frame periods; means for displaying said left image sub-frame during one or more of said sub-frame periods; and means for displaying said right image sub-frame during one or more of said sub-frame periods; wherein said left and right image sub-frames are displayed in an interleaved manner (column 10, lines 6-10; figure 16).

24. Claims 62 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Smith in view of Taniguchi as applied to claim 61 above, and further in view of Stuettler.

Referring to claims 62 and 63, Songer discloses a system of claim 61, wherein said means for generating said left and right image sub-frames comprises: means for generating left and right image sub-frame data defining said left and right image sub-frames.

Songer, McLaine, Smith and Taniguchi do not disclose a means for storing said left image sub-frame data in a first buffer; means for storing said right image sub-frame data in a second buffer; and means for controlling a spatial light modulator with said left and right image sub-frame data in said first and second buffers to generate said left and right image sub-frames; and a means for generating said 2D image frame comprises: means for generating 2D image frame data defining said 2D image frame; means for storing said 2D image frame data in a buffer; and means for controlling a spatial light modulator with said 2D image frame data in said buffer to generate said 2D image frame.

Stuettler discloses a means for storing said left image sub-frame data in a first buffer; means for storing said right image sub-frame data in a second buffer; and means for controlling a spatial light modulator with said left and right image sub-frame data in said first and second buffers to generate said left and right image sub-frames; and a means for generating said 2D image frame comprises: means for generating 2D image frame data defining said 2D image frame; means for storing said 2D image frame data

in a buffer; and means for controlling a spatial light modulator with said 2D image frame data in said buffer to generate said 2D image frame (column 2, lines 52-56; figure 4, parts 8a).

At the time of the invention if would have been obvious to a person or ordinary skill in the art to add the buffers from Stuettler to the method disclosed by Songer. The motivation for doing this would have been to allow for the display output to be synced up with the shutter glasses by controlling the outputs of the buffer.

At the time of the invention if would have been obvious to a person or ordinary skill in the art to observe that if the method disclosed by Songer displays images that can be viewed in either two or three dimensions depending on whether or not you're wearing a pair of glasses, that the buffering of the 3D frames described in Stuettler would also be buffering the 2D frames.

25. Claim 67 is rejected under 35 U.S.C. 103(a) as being unpatentable over Songer in view of McLaine in view of Smith as applied to claim 1 above, and further in view of Taniguchi.

Referring to claim 67, Songer, McLaine, and Smith do not disclose a method of claim 1, wherein generating said left and right image sub-frames and said 2D image frame comprises: storing said left and right image sub-frames in a first buffer; and storing said 2D image frame data in a second buffer; and controlling a spatial light modulator with data from either said first or second buffer depending on the selected mode of operation.

In an analogous art, Taniguchi teaches a method of claim 1, wherein generating said left and right image sub-frames and said 2D image frame comprises: storing said left and right image sub-frames in a first buffer (paragraph 93, lines 3-8); and storing said 2D image frame data in a second buffer (paragraph 82, lines 12-14); and controlling a spatial light modulator with data from either said first or second buffer depending on the selected mode of operation (paragraph 82, lines 6-11).

At the time of the invention it would have been obvious for one of ordinary skill in the art to use one buffer for 2D and another for 3D images as taught by Taniguchi in the system disclosed by Songer, McLaine, and Smith. The motivation for doing this would have been to easily switch between 2D and 3D displaying modes as the modes would use separate memories (Taniguchi: paragraph 81, lines 1-2).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin E. Shepard whose telephone number is (571) 272-5967. The examiner can normally be reached on 7:30-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Kelley can be reached on (571) 272-7331. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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